

In the claims:

1. (Currently Amended) A magnetic resonance imaging system comprising:

at least one superconducting magnet generating a static magnetic field;

a gradient coil assembly with an associated patient bore enclosure comprising:

at least one gradient shield coil ~~generating at least one gradient magnetic field~~; and

at least one static field-shaping coil residing between said at least one gradient shield coil and said patient bore enclosure and supplementing said static magnetic field.

2. (Original) A system as in claim 1 wherein said at least one superconducting magnet resides within a cryostat having at least one thermal shield, said at least one static field-shaping coil resides between said at least one thermal shield and said patient bore enclosure.

3. (Currently Amended) A system as in claim 1 wherein further comprising said at least one gradient shield coil compensating for pulse sequences generated within the magnetic resonance imaging system.

4. (Currently Amended) A system as in claim [[3]]1 wherein said at least one gradient shield coil resides between said at least one superconducting magnet and ~~said gradient coil assembly~~ said at least one static field-shaping coil.

5. (Currently Amended) A system as in claim [[3]]1 wherein said at least one static field-shaping coil resides between said at least one gradient shield coil and ~~said patient bore enclosure~~ at least one gradient coil.

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6. (Original) A system as in claim [[3]]1 wherein said gradient coil assembly comprises said at least one gradient shield coil.

7. (Original) A system as in claim 1 further comprising a static field-shaping coil housing residing within a magnet structure of the magnetic resonance imaging system, said at least one static field-shaping coil residing within said static field-shaping coil housing.

8. (Original) A system as in claim 7 wherein said static field-shaping coil housing is formed of a material that prevents induction of eddy currents therein.

9. (Original) A system as in claim 7 wherein said static field-shaping coil housing is formed of a composite material.

10. (Original) A system as in claim 7 wherein said static field-shaping coil housing comprises a coolant.

11. (Original) A system as in claim 10 wherein said coolant is cooled via a cryocooler.

12. (Original) A system as in claim 1 wherein the magnetic resonance imaging system is of a cylindrical or open architecture design.

13. (Original) A system as in claim 1 wherein said at least one superconducting magnet comprises at least one low temperature superconductor.

14. (Original) A system as in claim 1 wherein said at least one superconducting magnet comprises at least one high temperature superconductor.

15. (Original) A system as in claim 1 wherein said at least one static field-shaping coil comprises at least one low temperature superconductor.

16. (Original) A system as in claim 1 wherein said at least one static field-shaping coil comprises at least one high temperature superconductor.

17. (Original) A system as in claim 1 wherein said at least one static field-shaping coil is unshielded from said at least one gradient magnetic field.

18. (Original) A system as in claim 1 wherein said at least one static field-shaping coil is inductively isolated from said at least one gradient coil assembly.

19. (Original) A system as in claim 1 wherein said at least one static field-shaping coil is cooled using at least one of a cryogen bath, conduction, or convection.

20. (Original) A system as in claim 1 wherein said at least one static field-shaping coil is cooled via a coolant selected from at least one of helium, nitrogen, hydrogen, or neon.

21. (Original) A system as in claim 1 wherein said at least one static field-shaping coil is approximately a factor of ten smaller than said at least one superconducting magnet.

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22. (Original) A system as in claim 1 wherein at least one of said at least one static field-shaping coil is replaced with an iron ring.

23. (Original) A system as in claim 1 wherein said at least one superconducting magnet resides at least partially within a first former and said at least one static field-shaping coil resides at least partially within a second former.

24. (Currently Amended) A magnetic resonance imaging system comprising:

at least one superconducting magnet generating a static magnetic field;

~~at least one gradient shield coil compensating for pulse sequences generated within the magnetic resonance imaging system;~~

a gradient coil assembly with an associated patient bore enclosure comprising:

at least one gradient coil generating at least one gradient magnetic field; and

at least one supplemental static field-shaping coil residing within between said at least one gradient coil assembly and said patient bore enclosure and increasing strength of said static magnetic field.

25. (Currently Amended) A system as in claim 24 further comprising wherein said at least one gradient shield coil resides residing between said at least one superconducting magnet and said gradient coil assembly patient bore enclosure.

26. (Currently Amended) A magnetic resonance imaging system comprising:

at least one superconducting magnet generating a static magnetic field;

at least one gradient shield coil compensating for pulse sequences generated within the magnetic resonance imaging system;

a gradient coil assembly with an associated patient bore enclosure comprising:

at least one gradient coil generating at least one gradient magnetic field in the patient bore; and

at least one supplemental static field-shaping coil residing between said at least one gradient shield coil and said patient bore enclosure, said at least one supplemental static field-shaping coil being unshielded from said at least one gradient magnetic field and increasing strength of said static magnetic field.

27. (Currently Amended) A system as in claim 26 wherein said at least one gradient shield coil supplemental static field-shaping coil resides external to said at least one gradient coil between said at least one superconducting magnet and said gradient coil assembly.